

THE BIRDS OF A REMNANT OF NATIVE VEGETATION ON THE EASTERN SWAN COASTAL PLAIN

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ABSTRACT

A three year study of the avifauna of a 13.8 ha. reserve on the eastern edge of the Swan Coastal Plain 15 km east of Perth, Western Australia recorded 55 species of bird, of which 21 were resident and 17 bred. Despite being surrounded by suburban housing development nearly a quarter of the species present are those normally associated with undisturbed forest communities. This study shows that, given adequate protection, even small reserves can provide suitable habitats for a large number of bird species within a suburban environment.

INTRODUCTION

Within the Perth metropolitan area few areas contain native vegetation which provides suitable habitat for native birds. Reserves such as Kings Park (400 ha.), Bold Park (300+ ha.) and Whiteman Park (390 ha.) are obvious exceptions but share a common fate with smaller reserves in that they are isolated from one another. Most birds which inhabit such reserves can move out into the surrounding suburbs but few species are capable of moving from one reserve to another. For many species of birds their continued survival in the metropolitan area is dependent on the preservation and management of these reserves.

This paper describes the avifauna of a small reserve on the eastern part of the Swan Coastal Plain at Forrestfield, adjacent to the Darling Scarp (Figure 1).

SITE DESCRIPTION

The reserve (No. 29815) occurs on land

owned by the State Government and managed by the Agriculture Protection Board of Western Australia (APB). The APB complex at Forrestfield covers an area of 13.8 ha., of which approximately 8 ha. remain as natural vegetation. The site was partially cleared and developed for use by the APB in 1970.

The vegetation is mature and in most places heath forms a dense cover to about one metre high. Within the small area encompassed by the site there is considerable variation in the vegetation associations. Open Banksia woodland over low heath, open Jarrah (*Eucalyptus marginata*) woodland over low heath and low heath alone, are all represented. A detailed description of the site, a vegetation map and a complete list of the plant species present have been published previously (Robinson and Mawson 1992). The last fire to burn through the area occurred in the summer of 1969/70.

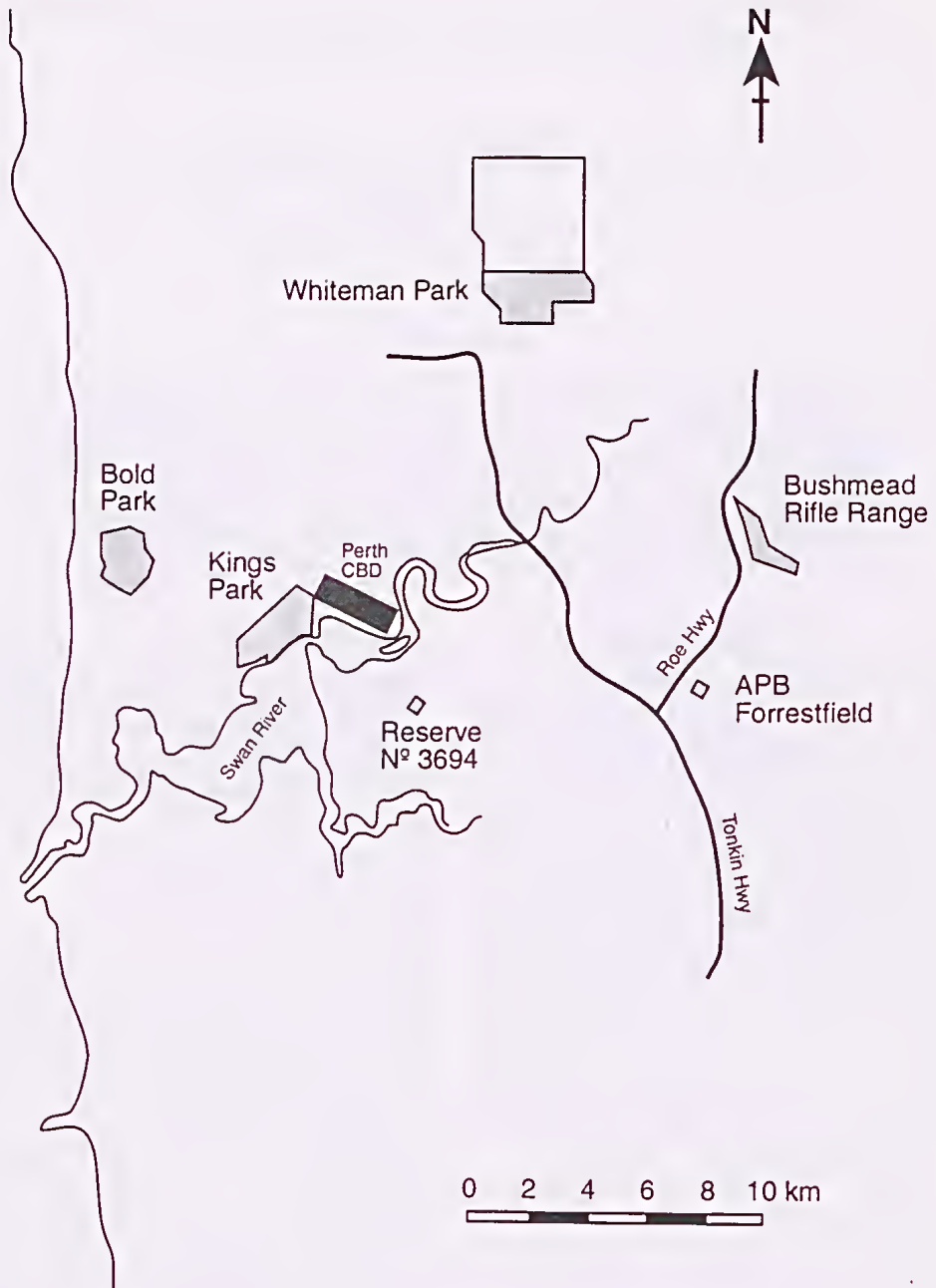


Figure 1. The location of the various reserves in the Perth Metropolitan area in relation to the Perth central business district (CBD).

METHODS

Observations were made opportunistically during each month from January 1990 to December 1992. Initially records were kept of the species present during each month and any signs of breeding occurring at the site. Additional data on the abundance of each species were collected when the site was included in the Australian Bird Census (ABC), a project co-ordinated by the Royal Australasian Ornithologists Union and begun in 1991. Surveys for the ABC project were conducted on one day in each month.

A species was recorded as being present if it was within the boundaries of the site even if only observed flying overhead. A species was considered to be breeding at the site if nests were observed, adults were seen taking food to nests, or newly fledged young were observed within the boundaries of the site.

A species was considered 'resident' if it was recorded at the site for 10 or more months in the year, and common if it was recorded in numbers greater than 10 birds ('uncommon' for less than 10 birds).

The location of this site relevant to other nearby remnants and significant reserves mentioned in the text is shown in Figure 1. A comparison of the bird community of this site is made with several well known large reserves within the Perth metropolitan area (Table 2). Nomenclature follows that of Blakers *et al.* (1984).

RESULTS

A total of 55 species of bird were recorded during the period 1990–1992, representing 43 genera from 25

families. The names of species recorded, the months and years that they were recorded, a comment on the abundance and status of each species and whether it bred at the site are given in Table 1.

Resident and Breeding Species

Twenty-one species were recorded as resident at the site and of those seven (Laughing Turtle-dove, Yellow-rumped Thornbill, Red Wattlebird, Brown Honeyeater, Silvereye, Australian Magpie, Australian Raven) were considered common. All seven common resident species were recorded breeding at the site. Ten (out of 14) uncommon resident species (Red-capped Parrot, Port Lincoln Ringneck, Welcome Swallow, Black-faced Cuckoo-shrike, Willie Wagtail, Western Gerygone, Singing Honeyeater, Striated Pardalote, Magpie Lark and Grey Butcherbird) also bred at the site.

The three species of cuckoo and the Sacred Kingfisher may also breed at the site, but we have been unable to confirm this.

Vagrant Species

Twenty of the species recorded were vagrants which were present for only a few days at a time during any one of a number of months in any year (eg most of the raptors), or were recorded only once or twice (eg Yellow-plumed Honeyeater, New Holland Honeyeater, White-cheeked Honeyeater, Varied Sitella, Western Thornbill, Golden Whistler and White-fronted Chat). None of the vagrant species bred at the site although the Collared Sparrowhawk and the Brown Goshawk which were observed were mostly in immature plumage. The Silver Gull was

Table 1. Species recorded at the Forrestfield site 1990-1992 (V= vagrant, C= common, U= uncommon, CR= common resident, UR= uncommon resident, US= uncommon seasonal visitor.

Species Common Name	1990	1991	1992	Jan	Feb	Mar	Apr	May	Jun	Jly	Aug	Sep	Oct	Nov	Dec	Status	Breeding
Australian Wood Duck (<i>Chenonetta jubata</i>)	*	*	*							*	*					V	
Pacific Black Duck (<i>Anas superciliosa</i>)		*	*									*				V	
Brown Goshawk (<i>Accipiter fasciatus</i>)		*	*	*	*			*	*			*				V	
Collared Sparrowhawk (<i>A. cirrhocephalus</i>)		*	*	*	*	*		*	*				*			V	
Little Eagle (<i>Hieraaetus morphnoides</i>)		*	*			*								*		V	
Whistling Kite (<i>Haliastur sphenurus</i>)		*		*												V	
Black-shouldered Kite (<i>Elanus notatus</i>)		*						*								V	
Little Falcon (<i>Falco longipennis</i>)		*	*									*	*			V	
Peregrine Falcon (<i>F. peregrinus</i>)		*					*									V	
Brown Falcon (<i>F. berigora</i>)		*		*												V	
Australian Kestrel (<i>F. cenchroides</i>)		*	*	*					*							V	
Silver Gull (<i>Larus novaehollandiae</i>)		*	*							*	*	*				V	
Common Bronzewing (<i>Phaps chalcoptera</i>)		*	*	*			*	*	*	*	*	*	*	*	*	U	

Feral Pigeon (<i>Columba livia</i>)	*	*	*	*	*	*	*	*	*	*	*	*	*	U
Spotted Turtle-dove (<i>Streptopelia chinensis</i>)	*	*	*	*	*	*	*	*	*	*	*	*	*	U
Laughing Turtle-dove (<i>S. senegalensis</i>)	*	*	*	*	*	*	*	*	*	*	*	*	*	CR B
White-tailed Black Cockatoo (<i>Calyptorhynchus</i> sp.)	*	*	*	*	*	*	*	*	*	*	*	*	*	C
Galah (<i>Cacatua roseicapilla</i>)	*	*	*	*	*	*	*	*	*	*	*	*	*	C
Purple-crowned Lorikeet (<i>Glossopsitta porphyrocephala</i>)	*	*	*	*	*	*	*	*	*	*	*	*	*	V
Red-capped Parrot (<i>Purpurecephalus spurius</i>)	*	*	*	*	*	*	*	*	*	*	*	*	*	UR B
Port Lincoln Parrot (<i>Barnardius zonariis</i>)	*	*	*	*	*	*	*	*	*	*	*	*	*	UR B
Pallid Cuckoo (<i>Cuculus pallidus</i>)	*	*	*	*	*	*	*	*	*	*	*	*	*	US ?B
Horsefield's Bronze Cuckoo (<i>Chrysococcyx basalis</i>)	*	*	*	*	*	*	*	*	*	*	*	*	*	US ?B
Shining Bronze Cuckoo (<i>C. lucidus</i>)	*	*	*	*	*	*	*	*	*	*	*	*	*	US ?B
Southern Boobook (<i>Ninox novaeseelandiae</i>)	*	*	*	*	*	*	*	*	*	*	*	*	*	U
Laughing Kookaburra (<i>Dacelo gigas</i>)	*	*	*	*	*	*	*	*	*	*	*	*	*	UR
Sacred Kingfisher (<i>Halcyon sancta</i>)	*	*	*	*	*	*	*	*	*	*	*	*	*	US
Rainbow Bee-eater (<i>Merops ornatus</i>)	*	*	*	*	*	*	*	*	*	*	*	*	*	US

Table 1 (continued)

Species Common Name	1990	1991	1992	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Status	Breeding
Welcome Swallow (<i>Hirundo neoxena</i>)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	UR	B
Tree Martin (<i>Cecropis nigricans</i>)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	U	
Black-faced Cuckoo-Shrike (<i>Coracina novaehollandiae</i>)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	UR	B
Golden Whistler (<i>Pachycephala pectoralis</i>)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	V	
Rufous Whistler (<i>P. rufiventris</i>)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	UR	
Grey Fantail (<i>Rhipidura fuliginosa</i>)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	UR	
Willie Wagtail (<i>R. leucophrys</i>)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	UR	B
Western Warbler (<i>Gerygone fusca</i>)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	UR	B
Western Thornbill (<i>Acanthiza inornata</i>)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	V	
Yellow-rumped Thornbill (<i>A. chrysorrhoa</i>)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	CR	B
Varied Sittella (<i>Daephoenositta chrysoptera</i>)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	V	
Singing Honeyeater (<i>Lichenostomus virescens</i>)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	UR	B

Yellow-plumed Honeyeater (<i>L. ornatus</i>)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	V
Red Wattlebird (<i>Anthochaera carunculata</i>)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	CR
Little Wattlebird (<i>A. chrysoptera</i>)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	US
Brown Honeyeater (<i>Lichmera indistincta</i>)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	CR
White-cheeked Honeyeater (<i>Phylidonyris nigra</i>)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	V
New Holland Honeyeater (<i>P. novaehollandiae</i>)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	V
Western Spinebill (<i>Acanthorhynchus superciliosus</i>)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	US
White-fronted Chat (<i>Epthianura albifrons</i>)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	V
Mistletoebird (<i>Dicaeum hirundinaceum</i>)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	UR
Striated Pardalote (<i>Pardalotus striatus</i>)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	UR
Silvereye (<i>Zosterops lateralis</i>)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	CR
Magpie Lark (<i>Grallina cyanoleuca</i>)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	UR
Grey Butcherbird (<i>Cracticus torquatus</i>)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	UR
Australian Magpie (<i>Gymnorhina tibicen</i>)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	CR
Australian Raven (<i>Corvus coronoides</i>)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	CR

recorded in the area presumably because of the close proximity of the Forrestfield land-fill site. However, despite the close proximity of the land-fill site only two Silver Gulls were seen flying overhead during the three years of the study.

Migrant and Seasonal Species

Eight species can be considered as either migratory or seasonal visitors to the site. None of the three species of cuckoo has been recorded calling at the site for more than a few days at a time. The Sacred Kingfisher and Rainbow Bee-eater both arrive in October and remain until mid- to late summer.

The arrival and departure of the Little Wattlebird and the Western Spinebill were closely correlated with the flowering of one of three species of large *Banksia* (*B. attenuata*, *B. menziesii* and *B. burdettii* (introduced)) which grow at the site.

The Grey Fantail is present for most of the year but seldom recorded during the summer months.

DISCUSSION

This study shows that a large number of bird species (55) will utilise areas as small as 13.8 ha. The number of species recorded from this site is comparable to the avifauna of much larger reserves and is richer than some notable reserves in the metropolitan area such as Kings Park (Table 2).

The number of species of raptors recorded from this site is greater than that recorded from any of the reserves listed in Table 2. However, all but two species (Collared Sparrowhawk and Brown Goshawk) were only ever recorded flying over

the site. The major attraction of the site for the Sparrowhawks and Goshawks was the high numbers of Laughing Turtle-doves, which they preyed on. The close proximity to the Darling Scarp and its large areas of uncleared forest combined with the numerous grassed road verges of nearby highways undoubtedly contributed to the greater numbers of raptor species visiting this site.

The fact that so many of the species (20 of 55) using the site are vagrant species is surprising. This suggests that reserves such as this, small though they are, are important refuges or stop-over points for highly mobile species such as the honeyeaters and migratory species such as the cuckoos, the Kingfisher and Bee-eater. Serventy and Whittell (1976) state that Pallid Cuckoos arrive in Perth at the end of May and depart by early November. At this site they have only been recorded calling in August and September which is the beginning of the breeding season for this species. A similar situation applies to the two species of Bronze-cuckoo as they have only been recorded calling at the site in the months of September and October.

There are several species of birds which nest at this site which are known hosts for these cuckoos. The preferred host of the Pallid Cuckoo is the Red Wattlebird, of Horsefield's Bronze-cuckoo the Splendid Fairy-Wren (absent from this site), and of the Shining Bronze-cuckoo the Yellow-rumped Thornbill (Brooker and Brooker 1989). Although both the Red Wattlebird and the Yellow-rumped Thornbill are common residents at Forrestfield these species may not be numerous enough to support breeding for the Pallid and Shining Bronze-cuckoo.

The presence of Mistletoe birds all year round is of interest. There are a few Stalked Mistletoe (*Amyema miquelii*) plants present at this site, but not enough to provide food all year round. This suggests that this species is able to survive on other food sources available at the site or in the surrounding suburban gardens. We have not found any nests of this species but both adult males and females were seen regularly.

Nearly two thirds (13 of 21) of the resident species recorded are species normally associated with undisturbed forest habitat, while only eight could be considered as species which have adapted to the 'edge' environments provided by suburban gardens and parkland. The list of species present at the site appears similar to one which might be expected from any undisturbed forest or woodland. However, close examination shows that several small insectivorous species from the families Muscicapidae, Acanthizidae and Maluridae which are normally recorded in forest habitat are absent.

The species which may once have been present prior to the

development of the site and the surrounding housing estate, include Scarlet Robin (*Petroica multicolor*), Western Yellow Robin (*Eosaltria griseogularis*), Grey Shrike-thrush (*Colluricincla harmonica*), Weebill (*Smicrornis brevirostris*) and Splendid Fairy-wren (*Malurus splendens*), and possibly the Inland Thornbill (*Acanthiza apicalis*) and White-browed Scrubwren (*Sericornis frontalis*).

The Scarlet Robin, Western Yellow Robin and Splendid Fairy-Wren were once regularly recorded in Kings Park (Recher and Serventy 1991, Tingay and Tingay 1982). Scarlet Robins, Splendid Fairy-Wrens, Weebills and Grey Shrike-thrush have all been recorded from the Bushmead Rifle Range (Halpern *et al.* 1991) which is only 5.5 km north of the Forrestfield site. The absence of these species may be a reflection of the very small size of the Forrestfield site. The Inland Thornbill and White-browed Scrubwren both require dense, long unburnt, shrublands in which to live. It is possible that the vegetation at this site is only now approaching an age and structure suitable for these species.

The large edge to surface area ratio at

Table 2. Numbers of species of birds (excluding waterbirds) recorded at Forrestfield and which have also been recorded from other significant reserves in the Perth metropolitan area.

Reserve	Area (ha.)	No. Species	No. Species in Common	Reference
This study	14	53	-	-
Kings Park	400	29	25	Recher and Serventy 1991.
Bold Park	300+	61	43	How and Dell 1990.
Whiteman Park	390	73	48	Arnold <i>et al.</i> 1991.
Bushmead Rifle Range site	297	60	40	Halpern <i>et al.</i> 1991.
Reserve No. 3694	6	17	17	Turpin 1990.

this site may also be a factor contributing to the low numbers of some of the species normally associated with forest (eg. Grey Fantail, Rufous Whistler, Western Gerygone, Yellow-rumped Thornbill) and the greater abundance of species which have benefited from the creation of 'edges' between habitats such as forest and suburban gardens (eg. Magpie, Australian Raven, Brown Honeyeater, Laughing Turtle Dove). This type of community structure, numerically dominated by 'edge' specialists, has been recorded in other parts of Australia where remnants of forest have become virtual islands in seas of suburban development (Catterall *et al.* 1991, Kavanagh *et al.* 1985, Howe 1986).

CONCLUSION

The continued survival of several of the species recorded here will depend on the preservation of the native vegetation of this site in the same condition as it is in now. This will mean continued exclusion of wildfire, prevention of weed invasion and no development of areas covered by native vegetation. To this end, and in recognition of the high quality of the native vegetation in this remnant, the vesting for this site has recently been amended to read "for the use of the Agriculture Protection Board of Western Australia and conservation" (Government Gazette 23/4/93).

The uncertain future of the Bushmead Rifle Range site, combined with plans to develop parts of a series of reserves one kilometre west of the Forrestfield site (which abut the Roe Freeway) into an industrial site will further isolate this remnant. What effect these changes will have on the bird community of this site is unknown. Increasing the security of

this remnant with the amendment to the vesting has not affected the APB's operations but will be of benefit to the native flora and fauna. Similar legal protection of other small remnants within the metropolitan area could make a considerable contribution to preserving other communities of native flora and fauna. Studies such as this, and others like it (eg. Turpin 1990), are needed to provide the documented evidence to support such changes to the vestings of the remaining remnants in the metropolitan area.

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